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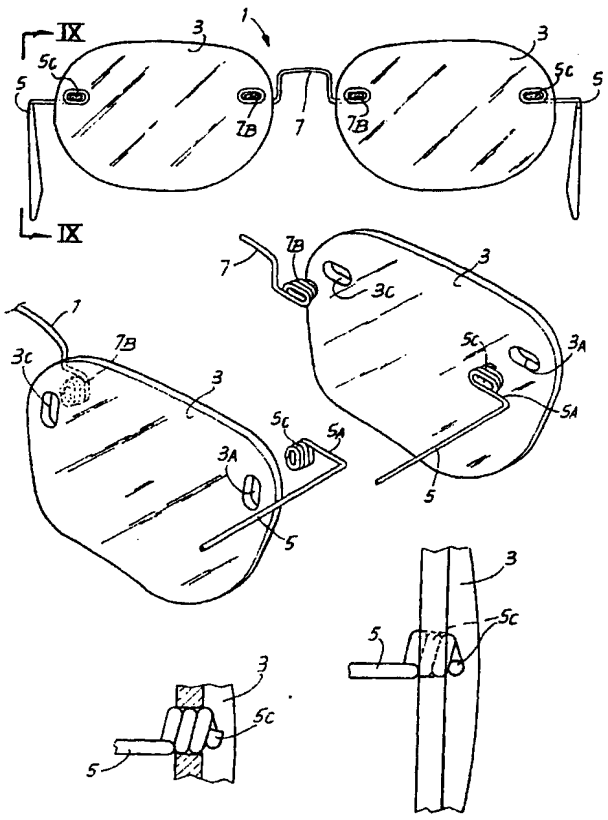

(57) Abstract: The eyeglasses comprise a pair of lenses (3) and a rimless frame with connecting means beetween the frame and the lenses. The connecting means comprise a set of projections formed by helical windings (5C, 7B) inserted in corresponding holes in the lenses.

WO 02/075435 A1

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RIMLESS FRAME FOR EYEGLASSES AND EYEGLASSES COMPRISING SAID FRAME

DESCRIPTION

Field of the invention

The invention relates to a frame for eyeglasses. More specifically, the invention relates to a type of frame known as "rimless", i.e. in which the lenses are not surrounded - neither partially nor totally - by rims. These frames are called "structural lens" systems, because the lenses are a structural component of the assembly formed by the frame and by the lenses.

Further, the invention relates to eyeglasses with a rimless frame.

Description of the prior art

Various different types of rimless frames are known in the prior art.

US-A-4,502,765 describes a rimless frame made of three elements, precisely two lateral temples hinged to lens connecting elements and an intermediate bridge reciprocally connecting the lenses. To connect the bridge to the lenses, the latter are provided with slots, into each of which two pins connected to the bridge are introduced. The assembly consisting of the slots and the pins prevents the reciprocal rotation of the lens and the bridge, while a screw and a nut are used to actually fasten the bridge to the lens. The screw passes through the slot in the lens, between the two pins of the bridge and through a hole made in a portion of the bridge, to which said pins are solidly fastened. This fastening system is particularly complex, due to the high number of elements it comprises. Furthermore, the use of lenses, nuts and the necessary lens protection washers make the frame cumbersome, annoying because it reduces the visual range and aesthetically unappealing.

US-A-5,073,020 describes a rimless frame in which the elements connecting the lenses to the temples and the intermediate bridge are fastened to the lenses by portions of looped wire inserted in slots in the lenses. Fastening should be obtained by effect of elastic compression of the metallic wire loop on the resting plane of the loop. Such compression is obtained by pressing the wire loop in the slot in the lens so that the elastic deformation of the wire generates a retaining force in correspondence with the ends of the

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respective slot.

In practice, this fastening system is neither very efficient nor reliable. For this reason, glue is always applied during assembly to stabilize the lenses on the wire of the frame to increase reliability. This makes lens assembly complex and not entirely reliable.

US-A-5,781,270 describes eyeglasses provided with a metallic wire rimless frame. These eyeglasses present a pair of lenses and a frame comprising a pair of elements for connecting the two lenses to a respective pair of temples and an intermediate bridge for reciprocally connecting the two lenses. The respective ends of the connecting elements of the two lenses and the temples present helical windings which mate with corresponding circular holes made in the lenses. Similarly, the ends of the wire of the bridge are shaped in the form of helical windings, which are inserted in corresponding holes in the lenses. The connection between lenses and connecting elements and between lenses and intermediate bridge is obtained by means of a screw passing through the helical windings and is fastened by a specially shaped nut. The windings on the connecting elements and the ends of the bridge are dimensioned to be accurately inserted in the respective holes in the lenses, to prevent the movement of the windings inside the hole. The mechanical fastening between frame and lens is obtained, in correspondence of each set of windings, by means of the aforesaid screw and nut. The purpose of the windings is to avoid that the force generated by the screw fastening is released onto the surface of the internal side of the hole in the lens. Despite the higher reliability of the lens connection, this frame presents a number of shortcomings deriving from the high number of elements and the dimensions of the fastening screws and nuts, which reduces the field of vision and makes the frame relatively heavy.

Object and summary of the invention

The object of the invention is the realization of eyeglasses and frames which do not present the aforesaid shortcomings.

Essentially, according to a first aspect of the invention eyeglasses are provided, comprising a pair of lenses and a rimless frame with connecting

means between the frame and the lenses, in which the connecting means comprise projections inserted in correspondence to the holes in the lenses; characteristically the external dimensions of the projections with respect to the dimensions of the corresponding holes form an interference of the projections in the corresponding holes whereby fastening the respective lens to the frame.

In the case of eyeglasses comprising a pair of lenses and a rimless frame, made of metallic wire with connecting means between the frame and the lenses, the connecting means comprise projections in the form of helical metallic wire windings inserted in corresponding holes of the lenses, the external dimensions of the windings with respect to the dimensions of the corresponding holes generating an interference of the windings in the corresponding hole whereby fastening the respective lens to the frame.

In another form of embodiment, the reciprocal intermediate connecting bridge of the lenses and a pair of temples with connecting elements to said respective lenses are made of molded synthetic resin and present projections formed by molding and provided with essentially annular or helical ridges, the ridges generating the interference in the corresponding holes in the lenses.

Unlike the situation described in US-A-5,073,020, the retaining effect is not entrusted to the elastic deformation of a wire loop due to compression in correspondence to the ends of the slots. Conversely, the entire perimetral development of the projections or windings presses on the side of the hole in the lenses. This, on one hand, distributes stress in an optimal way and, on the other hand, reciprocally binds the frame to the lens in a more effective and reliable way. This is because the temples and the bridge of the eyeglasses exert a certain type of stress on the lenses when the eyeglasses are worn. By making the connection between the frame and the lenses either with projections made of synthetic resin or in the form of metallic wire windings, the projections absorb the stress and ensure uniform distribution thereof on the lens. Furthermore, in the case of projections in the form of windings, the deformation of the first winding, consequent to the applied stress, does not compromise the tightness of the lenses, thanks to the presence of other

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windings, unlike frames of the known type in which the mating between frame wire and lens is entrusted to a loop portion of the wire.

The frame is made of a lower number of parts, is easier to apply and lighter, also aesthetically, since no screws are used, unlike other known frames (US-A-5,781,270).

In a practical form of embodiment, the frame can comprise a pair of elements connecting the lenses and a respective pair of temples, as well as an intermediate bridge reciprocally connecting the lenses. In this case, the connecting elements present respective ends shaped with said set of helical windings inserted in corresponding holes in the lenses. This fastening system can be used to bind the bridge to the lenses.

The holes in the lenses can be circular and the windings can be circular windings. In this case, a bond should be provided to prevent the rotation of the lenses with respect to the frame, consisting of lateral notches on the edges of the lenses in which portions of metallic wire forming the helical end windings are inserted.

On the other hand, according to a particularly advantageous embodiment of the invention, the holes in the lenses are elongated, i.e. slotted, and correspondingly the windings formed by the metallic wire are also elongated or oblong. In this way, the rotation between lens and frame is prevented simply by forcing the windings into the slots. This avoids the need to make notches along the edge of the lens which is a starting point for cracks. This also increases the flexibility of design of the frame, as will clearly appear in the examples of embodiment described below.

To facilitate the introduction of the windings in the holes (either circular or slotted) in the lenses and to ensure a sufficient retaining force between the frame and the lenses at the same time, according to a possible and advantageous embodiment of the invention, the windings have variable dimensions, so that the totality or set of helical windings present an essentially tapered development, or anyhow presenting a reduction in dimensions of some turns of the winding. This forms a lead-in for inserting and forcing the windings in the hole in the lens. Preferably, only one or two terminal windings

with respect to the rest of the winding present a smaller external dimension to facilitate insertion without reducing or compromising the tightness of the lens after assembly. However the possibility that all windings may present the same dimensions is not ruled out.

When the holes and windings are elongated, the longer axis of the windings and the holes can be horizontally or vertically oriented with respect to the position of the eyeglasses during use. The choice of orienting the longer axis of the slots and consequently of the windings inserted in the slots can be made on the basis of both technical and aesthetic considerations, according to the shape of the lens and consequently the distribution of the material where the slot is made, which must be as close to the edge as possible to prevent interference with the field of vision, but adequately distanced from the edge to prevent excessively weakening the lens.

According to a different aspect, the present invention also concerns a rimless frame for eyeglasses with connecting means between the frame and the lenses, in which the connecting means comprise projections destined to be inserted in corresponding holes in the lenses, characterized in that the external dimensions of the projections with respect to the dimensions of the corresponding holes generate an interference of the projections in the corresponding holes to fasten the respective lens to the frame.

According to a possible form of embodiment, the frame is made of metallic wire and presents a set of helical windings intended to be inserted in corresponding holes of the lenses. Characteristically, the external dimensions of the windings generates an interference and compression of the windings in the holes in the lenses for fastening the lenses to the frame.

The set of helical windings can be used to connect the bridge and/or the connecting elements of the temples to the lenses.

The connecting elements can be joined to the temples of the frame by means of a hinge, but the possibility is not ruled out that said connecting elements form an extension of a single continuous wire also forming the temples and which is sufficiently flexibile to avoid the presence of a hinge.

Additional advantageous features of the frame and eyeglasses

according to the invention are indicated in the accompanying claims.

Brief description of the drawings

The invention will be better understood by reading the following description reference being made to the accompanying drawing, which show a practical non limiting example of the invention. In the drawing:

figure 1 is a frontal view of a pair of eyeglasses in a first form of embodiment;

figure 2 shows a plan view according to II-II in figure 1;

figure 3 shoes an enlarged detail of a connecting area of the bridge to one of the lenses in the frame of figure 2;

figure 4 shows a similar view of figure 3 of a variant embodiment;

figure 5 shows a portion of the eyeglasses in figures 1 and 2 with a slightly modified temple;

figure 5A shows a modification of the eyeglasses in figures from 1 to 5;

figure 6 shows a frontal view of a different embodiment of the eyeglasses according to the invention;

figure 7 shows a perspective view of a portion of the eyeglasses in figure 6;

figure 8 shows a similar view of figure 7 in a variant embodiment;

figure 9 shows a lateral view of a detail of the form of embodiment in figure 7;

figure 10 shows a variant embodiment in a view similar to figure 9;

figures 11 and 12 show a frontal view of an additional embodiment of a pair of eyeglasses and in the view according to XII-XII in figure 11;

figure 13 shows a partial exploded perspective view;

figures 14 and 15 show two local cross-sections according to XIV-XIV and XV-XV in figure 11 (enlarged) and

figure 16 is similar to figure 14 illustrating in this case the trimmed appearance after shortening the joining projection.

Detailed description of the preferred embodiments of the invention

With reference to figures from 1 to 5, numeral 1 generically indicates a pair of eyeglasses comprising lenses 3 and a pair of temples 5. The lenses 3

are reciprocally joined by a bridge 7. The bridge 7 and the temples 5 are made of metallic wire. Pads for resting the eyeglasses on the nose, generically indicated by reference numeral 9 in the view of figure 1 and omitted in the other figures for the sake of simplicity, can be either soldered or fastened in other way to the bridge 7.

In figures 1 and 2, the temples 5 are hinged by means of respective hinges 5B to respective lateral elements 5A connecting the temples to the respective lenses 3. It is not ruled out that the temples 5 can be made of a continuous metallic wire which also forms the lateral connecting element 5A of the lenses, as shown in figures 5 and 5A.

Each of the connecting elements 5A comprises a set of helical windings 5C which, as shown particularly in the view of figure 5, present a tapered (i.e. conical) shape to be more easily inserted with a certain force in circular holes 3A made in the lenses 3. The forcing determines the shape coupling between the connecting element 5A (and more precisely the terminal helical windings 5C) and the respective lens 3.

Since the hole 3A and the windings 5C each present a circular shape, a notch 3B is provided on the edge of each of each lens in which a portion of the metallic wire forming the connecting element 5A or the temple 5 is inserted, to prevent the reciprocal rotation of the connecting element 5A and the respective lens. Rotation can be prevented in the described way, regardless of the configuration of the temple, either with a hinge 5B as shown in figures 1 and 2, or without a hinge, as shown in figures 5 and 5A. The latter show configurations which differ solely in that in one case the windings 5B are inserted in the hole 3A of the respective lens on the side of the lens facing the user while in the other case the insertion is made on the opposite side.

As appears in figures from 1 to 5, also the intermediate bridge 7 is connected to the lenses 3 by means of a similar arrangement. For this purpose, the bridge presents a set of helical windings 7B on both ends, which are inserted in the corresponding holes 3C in the lenses 3. The windings 7B, in the example shown, present a tapered shape, i.e. a dimension which decreases from the proximal to the distal zone, so as the windings 5B of the

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connecting elements 5A. This facilitates inserting and forcing the windings 7B in the holes 3C of the lenses 3.

The circular shape of the holes 3C and the corresponding shape of the helical windings 7B requires additional notches 3D in the lenses 3 which engage approximately straight portions of the wire forming the bridge 7, so to prevent the rotation of the lenses 3 with respect to the bridge 7. This is regardless of the direction in which the windings 7B are inserted in the holes 3B, as shown in the two alternatively forms illustrated in figures 3 and 4.

Figures from 6 to 9 show modified embodiment with respect to figures from 1 to 5A. The same reference numerals are used to refer to the same or corresponding parts in the examples of embodiments shown in figures from 1 to 5A.

The substantial difference between the embodiment in figures from 6 to 9 and the embodiment in figures from 1 to 5A is in that the holes 3C in the lenses 3 in the second case are elongated, i.e. slotted, instead of circular. As shown in figures 6 to 9, the slots can be differently oriented with respect to the eyeglasses, and more specifically can be, for example, oriented horizontally (figures 6, 7 and 9) or vertically (figure 8), according to technical and/or aesthetic needs.

Correspondingly, also the helical windings 5B of the connecting element 5A and the helical windings 7B of the bridge 7 have a flat shape, i.e. are essentially elliptical or otherwise elongated to obtain shape coupling in the slots in the lenses 3.

The elongated shape of the holes for inserting the helical windings and the elongated shape of the latter avoids the presence of the notches 3B and 3D on the edges of the lenses 3, which were provided in the previous example of embodiment. This prevents the need to machine the lenses and eliminates a possible starting point for cracks in the lenses.

In both examples of embodiment, the helical windings 5B and 7B could present essentially constant external dimensions, instead of being variable from the distal end to the proximal end to form a lead-in for insertion in the respective holes of the lenses 3. However, the variable dimension of the

windings facilitates assembly of the frame.

Preferably, some terminal windings present reduced dimensions and the remaining windings have larger and constant dimensions.

Figure 10 shows an embodiment in which the windings have radially constant dimensions, with the exception of a partial end winding, whose size is slightly smaller to facilitate insertion in the hole in the lens.

Figures from 11 to 16 show the realization of a pair of eyeglasses 101 similar to the previously illustrated example, but in this case with the frame made of synthetic resin. Reference numeral 103 indicates the lenses, reference numeral 105 the two temples and reference numeral 107 the bridge joining the two lenses. The temples 105 are joined to a connecting element 105A by means of hinges 105B; the elements 105A connect the respective lenses 103. Alternatively, the temples 105 can form a single part with the connecting elements 105A, with a conformation and material permitting the elastic flexion of the temples to close the assembly 103, 107, 103, 107.

The bridge 107 can be equipped with appendixes 109 (figure 13) for resting the eyeglasses on the nose; said appendixes 109 can be made integral the bridge 107 or be reciprocally connected by a union 109A applicable to the bridge 107 by clipping or forcing by means of cooperating holes and pins, as those indicated by reference numerals 109A and 107A. The appendixes 109 can be plastically adapted when cold or hot, according to the user's needs.

According to the example shown in figures from 11 to 16, holes 110 and 112, whose shape is not circular, being preferably elongated in the form of a short slot, are provided in the lenses 103 for connecting the lenses 103, the bridge 107 and the connecting elements 105A; the connecting elements 105A and the bridge 107 present projections 114 and 116, respectively, possibly made by molding of said elements and said bridge; said projections 114, and 116 are developed as appendixes externally equipped with slightly projecting annular ridges 114A and 116A and preferably also present longitudinal holes 114B and 116B; the cross-section of said projections 114 and 116 correspond to the shape of the holes 110 and 112 and the

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dimensions ensure that the projections 114 and 116 can be inserted and forced in the holes 110 and 112, thanks to a certain interference of the dimensions of the holes and the projections due to the presence of the external ridges 114A. Also the presence of the longitudinal holes 114B and 116B favors forced clipping of the projections 114 and 116 in the holes 110 and 112. The holes 114B and the 116B are preferably develop from the ends of the projections 114 and 116. The jointing thus obtained ensures the stabile assembly of the eyeglasses. The terminal ends of the projections from the lenses can be cut as indicated by reference numeral 114C in figure 16 and if required heated and deformed to additionally stabilize coupling.

The non-circular shape of the holes 110 and 112 and of the transversal cross-sections of the projections 114 and 116 prevents the relative rotation of the lenses and the components of the frame.

The slightly tapered shape of the projections 114 and 116 facilitates insertion of the projections 114 and 116 in the holes 110 and 112 in the lenses and ensures forcing and stability of the joint.

It shall be understood that the drawing only illustrates a practical form of embodiment of the invention which shape and arrangement can vary all comprised within the concept of this invention.

CLAIMS

1. Eyeglasses comprising a pair of lenses and a rimless frame with connecting means between the frame and the lenses, in which the connecting means comprise projections inserted in corresponding holes in the lenses, characterized in that the external dimension of the projections with respect to the dimension of the corresponding holes generates an interference of the projections in the corresponding holes to connect the respective lens to the frame.
2. Eyeglasses according to claim 1, characterized in that said projections present ridges whose development is essentially annular or helical which generate the interference in the corresponding holes in the lenses.
3. Eyeglasses according to claim 1 or 2, characterized in that said projections present decreasing transversal cross-sections from the base of the union with the frame to the end, so to confer a lead-in conformation to the projections to facilitate insertion and forcing into the corresponding holes.
4. Eyeglasses according to at least one of the claims above, characterized in that said holes are elongated in shape and in that said projection present transversal cross-sections of corresponding shape, the coupling between the projections and the holes preventing the rotation of the connecting elements which respect to the lenses.
5. Eyeglasses according to at least one of claims 1 to 4, characterized in that said frame is made of metallic wire and in that said projections are in the shape of helical windings formed by said metallic wire, the external dimension of the windings with respect to the dimension of the corresponding holes generating an interference of the windings in the corresponding hole for binding the respective lens to the frame.
6. Eyeglasses according to claim 5, characterized in that said frame comprises a pair of connecting elements which connect the lenses to a respective pair of temples and an intermediate bridge reciprocally connecting the lenses and in that said sets of helical windings inserted in the corresponding lateral holes in the lenses are made on the terminal ends of the said connecting elements.

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7. Eyeglasses according to claim 6, characterized in that said bridge consists of a wire with two ends each provided with a set of windings and in that the lenses each present a respective additional hole in which the corresponding set of windings of the bridge are inserted.

8. Eyeglasses according to claim 5, 6, or 7, characterized in that at least some of the windings of each set have an external dimension which is variable and increasing from the distal end to the proximal end of said set of windings so to confer to the set of windings a lead-in conformation for insertion and forcing in the respective hole.

9. Eyeglasses according to claim 5, 6, 7, or 8, characterized in that said holes are elongated and in that said windings present a corresponding elongated conformation, the coupling of said set of windings and said holes preventing the rotation of the connecting elements which respect to the lenses.

10. Eyeglasses according to one or more of claims 5 to 8, characterized in that the windings are made of a circular cross-section wire, whose diameter is larger than the smaller transversal dimension of the cavity defined inside said windings.

11. Eyeglasses according to at least one of claims 1 to 4, comprising an intermediate bridge reciprocally connecting the lenses and a pair of temples with connecting elements of said temples to the respective lenses, characterized in that said bridge and said connecting elements are made of molded synthetic resin and present the projections formed by molding with approximately annular or helical ridges generating the interference in the corresponding holes in the lenses.

12. Eyeglasses according to claim 11, characterized in that said projections present longitudinal holes originating from the distal end of the projections.

13. Eyeglasses according at least to claim 11, characterized in that each of said projections can be sheared to reduce the part projecting over the part of crossed lens.

14. Eyeglasses according at least to claims 1 and 11, characterized in that the bridge presents two contoured appendixes (109) for resting the

eyeglasses on the nose.

15. Eyeglasses according to claim 14, characterized in that said appendixes (109) are connected by a union (109A) and that cooperating pins and seats for the application of said union to the bridge are provided.

16. A rimless frame for eyeglasses with connecting means between the frame and the lenses, in which the connecting means comprise projections intended to be inserted in corresponding holes in the lenses, characterized in that the external dimension of the projections which respect to the dimension of the corresponding holes generates an interference of the projections in the corresponding holes to connect the respective lens to the frame.

17. Frame according to claim 16, characterized in that said projections present ridges whose development is approximately annular or helical which generate the interference in the corresponding holes in the lenses.

18. Frame according to claim 16 or 17, characterized in that said projections present decreasing transversal cross-sections from the base of the union with the frame to the end, so to confer a lead-in conformation to the projections to facilitate insertion and forcing into the corresponding holes.

19. Frame according at least to one of claims 16 to 18, characterized in that said projections are elongated in shape to match holes having a corresponding shape, the coupling between the projections and the holes preventing the rotation of the connecting elements which respect to the lenses.

20. Frame according at least to one of claims 16 to 19, characterized in that said frame is made of metallic wire, said projections being formed by sets of helical windings, the external dimension of the windings being such as to generate an interference of the windings in said holes for connecting the connecting elements to the lenses.

21. Frame according to claim 20, characterized in that it comprises a pair of connecting elements to connect the lenses to a respective pair of temples and an intermediate bridge reciprocally connecting the lenses and in that said sets of helical windings insertable in corresponding lateral holes in the

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lenses are made on the terminal ends of the said connecting elements.

22. Frame according to claim 21, characterized in that said bridge consists of a wire with two contoured ends each with a set of windings suitable for being inserted in respective holes in the lenses.

23. Frame according to claim 20, 21, or 22, characterized in that at least some of the windings of each set have an external dimension which is variable and increasing from a distal end to a proximal end of said set of windings so to confer to the set of windings a lead-in conformation for insertion and forcing in the respective holes in the lenses.

24. Frame according to one of claims 20 to 23, characterized in that said windings present an elongated conformation, the coupling of said set of windings and the holes in the lenses, whose shape is also elongated, preventing the reciprocal rotation of the lenses and the frame.

25. Frame according to one or more of the claims 20 to 24, characterized in that the windings are made of a circular cross-section wire, whose diameter is lager than the smaller transversal dimension of the cavity defined inside said windings.

26. Frame according to at least one of the claims 16 to 19, characterized in that it comprises an intermediate bridge reciprocally connecting the lenses and a pair of temples with connecting elements of said temples to the respective lenses, and wherein said bridge (107) and said connecting elements (105) are made of molded synthetic resin and present the projections (116; 114) formed by molding with approximately annular or helical ridges (116A; 114A) generating the interference in the corresponding holes (112; 110) in the lenses.

27. Frame according to claim 26, characterized in that said projections present longitudinal holes (114B; 116B) originating from the distal end of the projections.

28. Frame according at least to claim 26, characterized in that each of said projections can be sheared to reduce the part projecting over the part of crossed lens.

29. Frame according at least to claim 26, characterized in that the bridge

presents two contoured appendixes (109) for resting the eyeglasses on the nose.

30. Frame according to claim 29, characterized in that said appendixes (109) are connected by a union (105A) and that cooperating pins and seats (107A; 109B) for the application of said union to the bridge are provided.

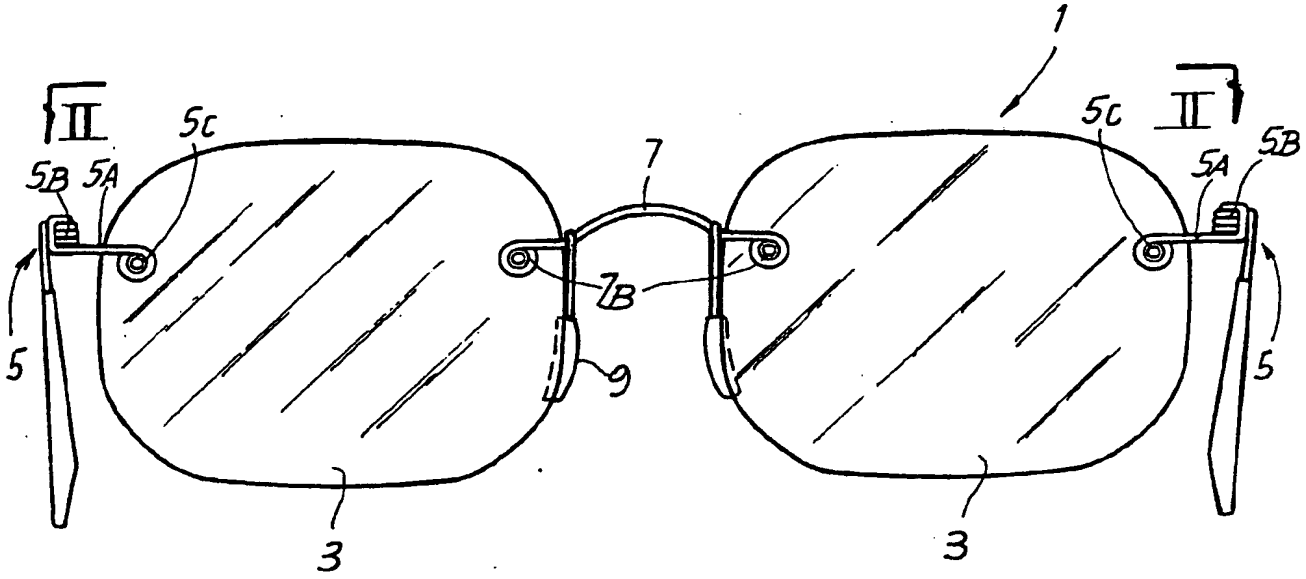
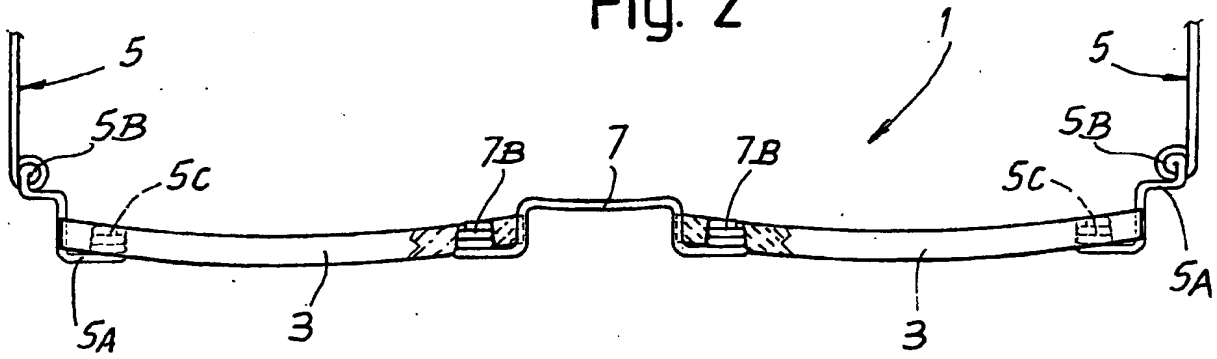


Fig.1

Fig. 2



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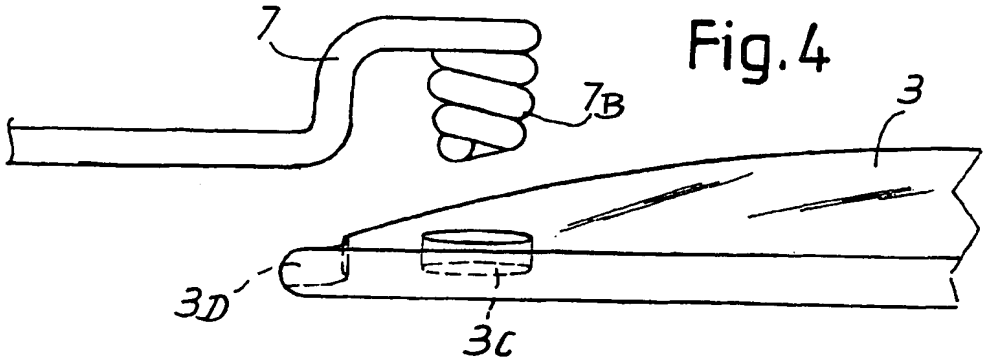

Fig.4

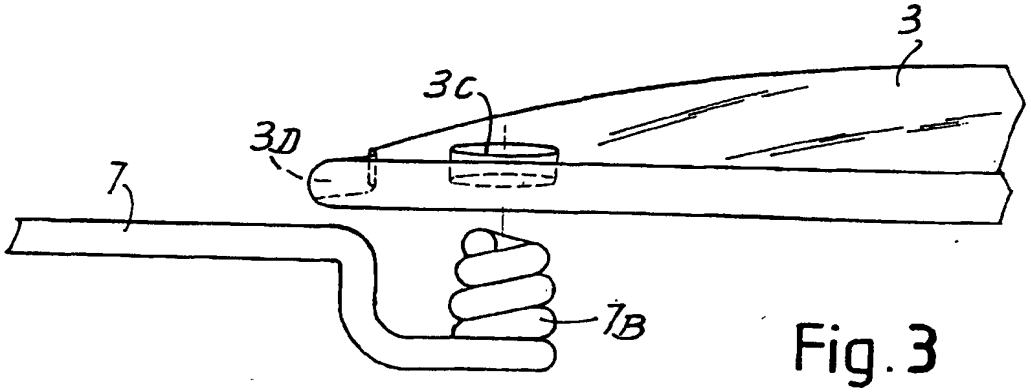

Fig.3

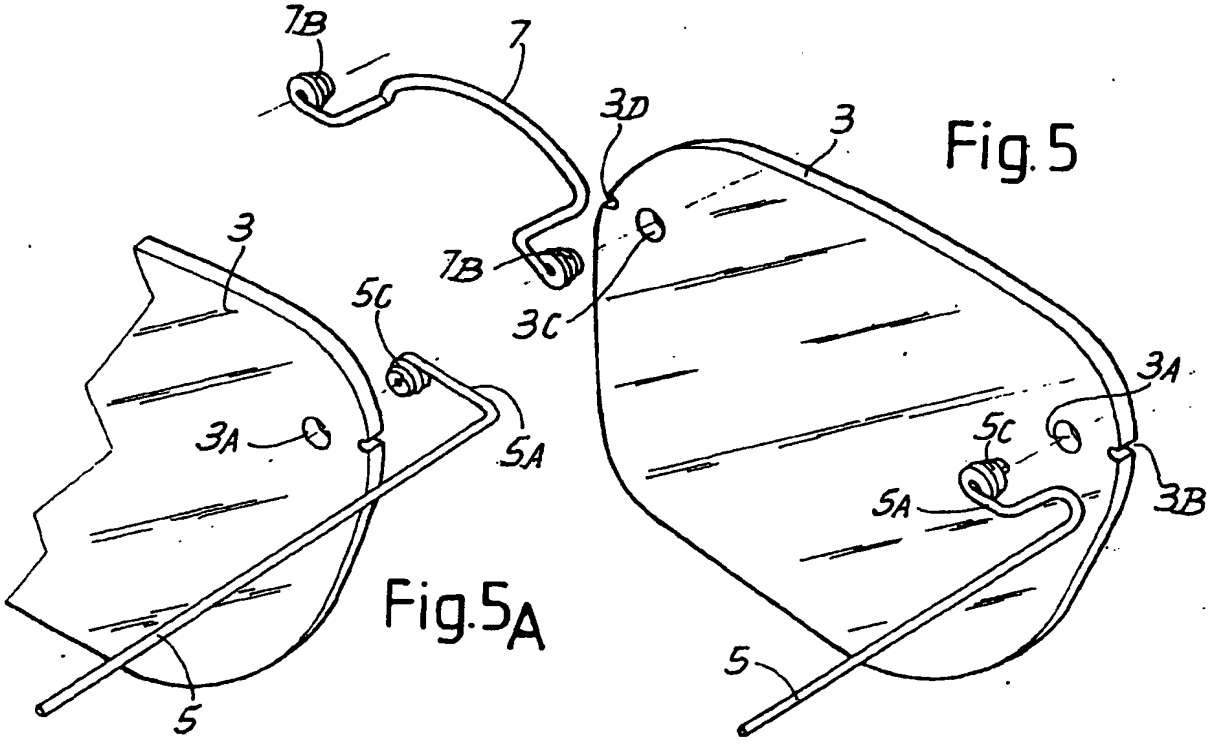

Fig.5

Fig.5A

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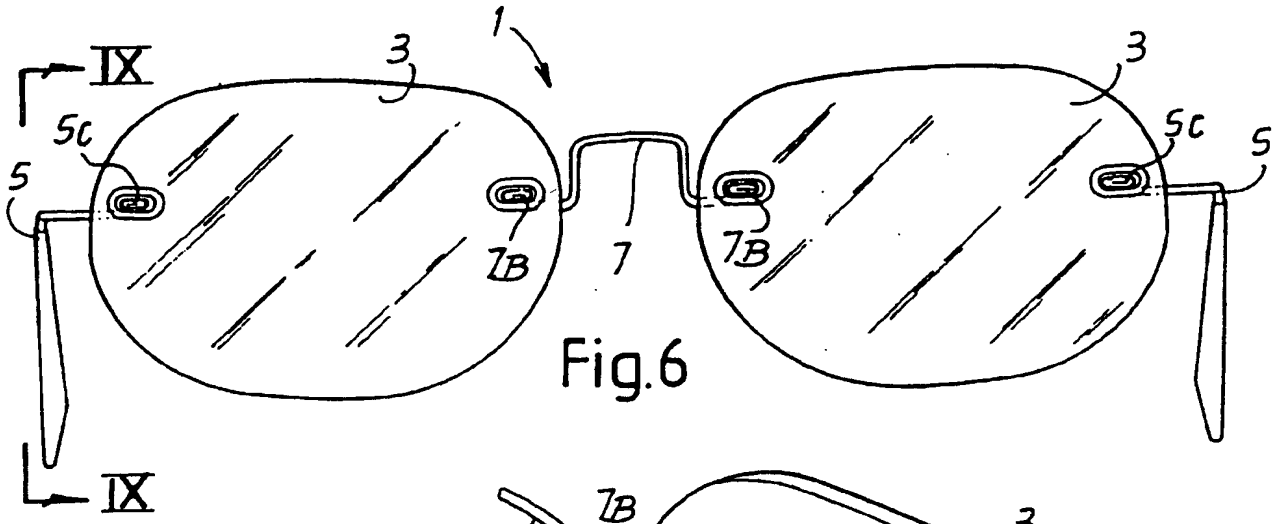

Fig.6

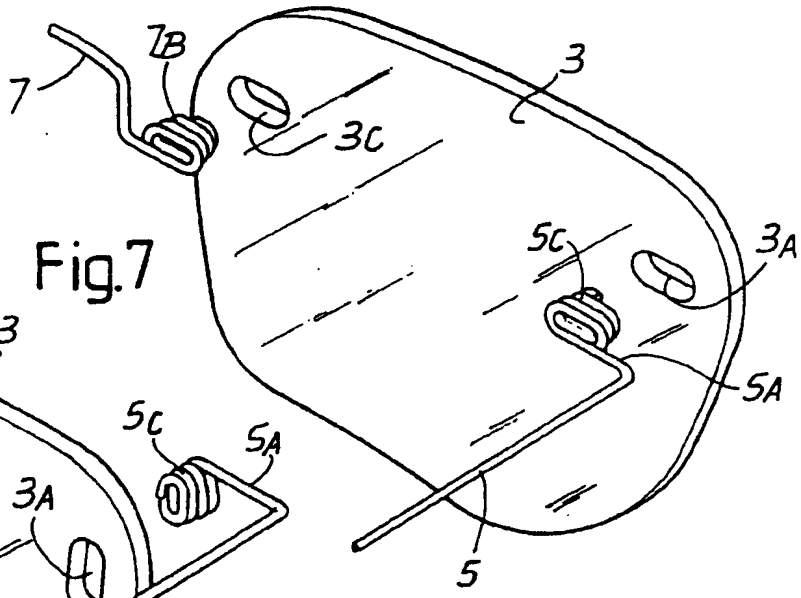

Fig.7

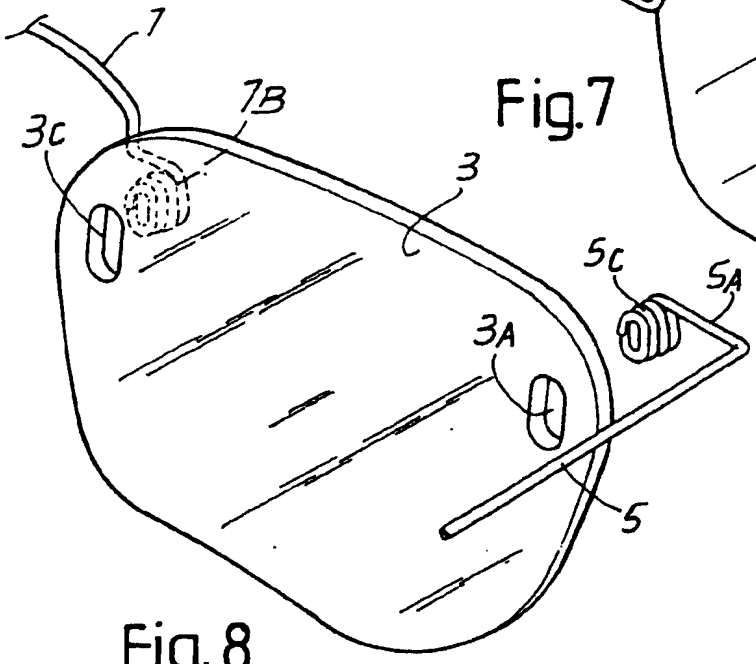

Fig.8

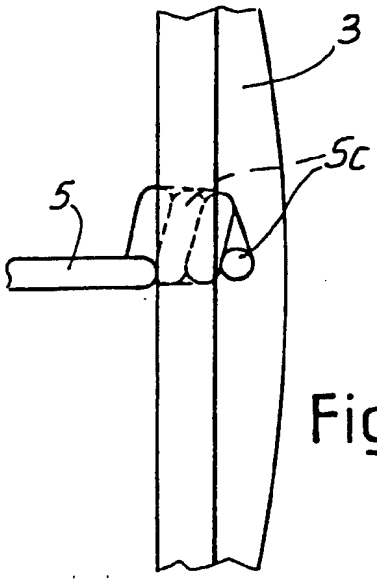

Fig.9

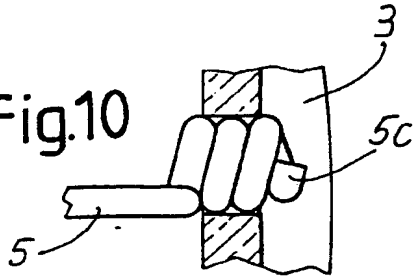

Fig.10

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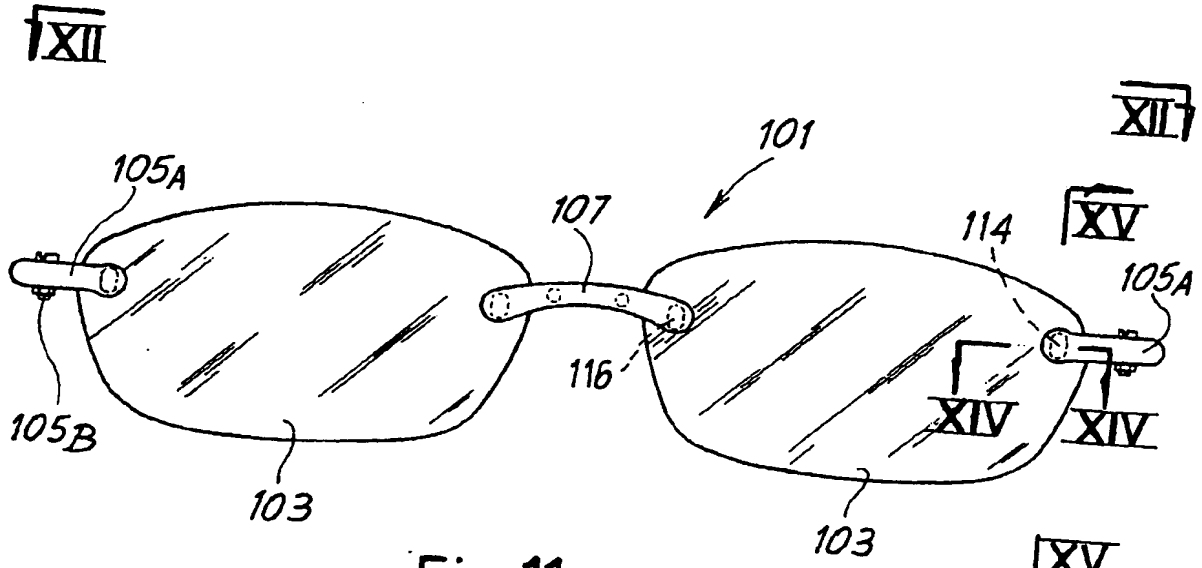

Fig. 11

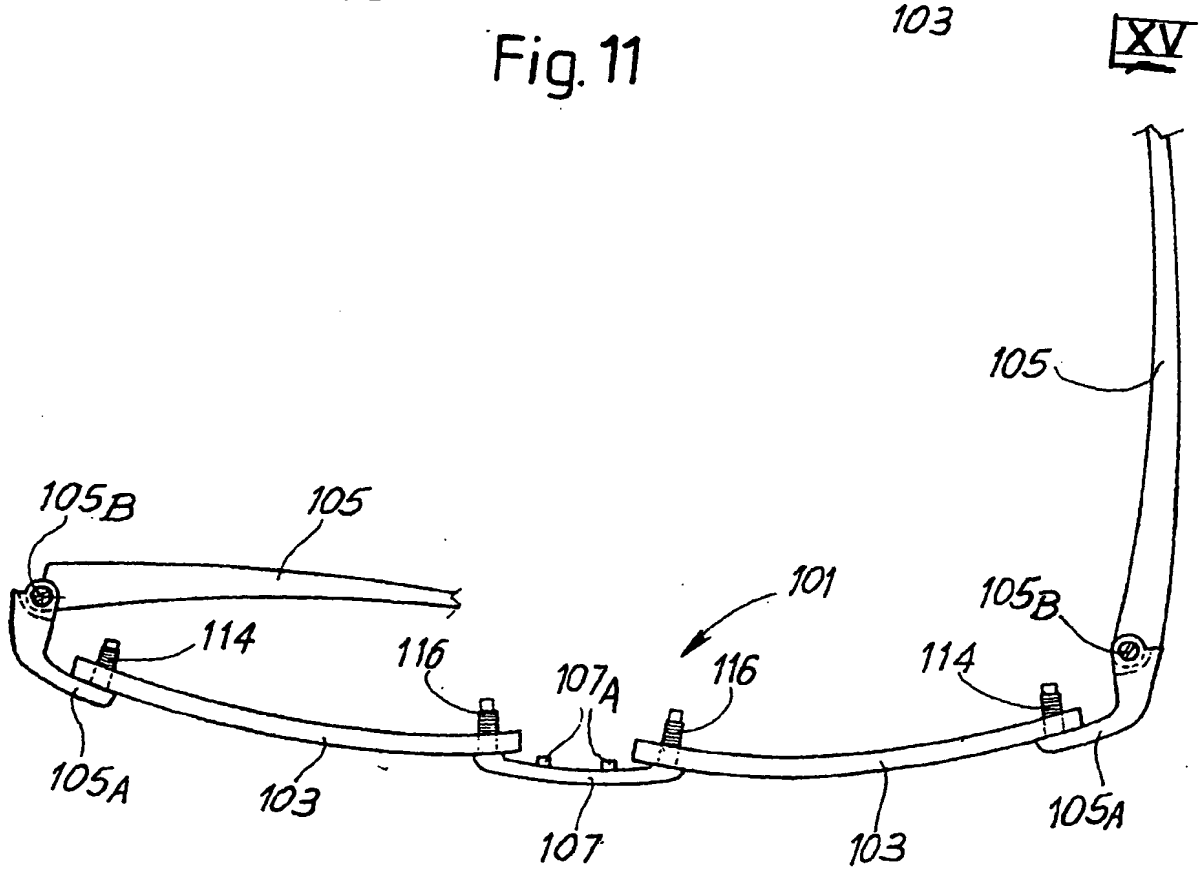

Fig. 12

3NSDOCID: <WO_____02075435A1_IA>

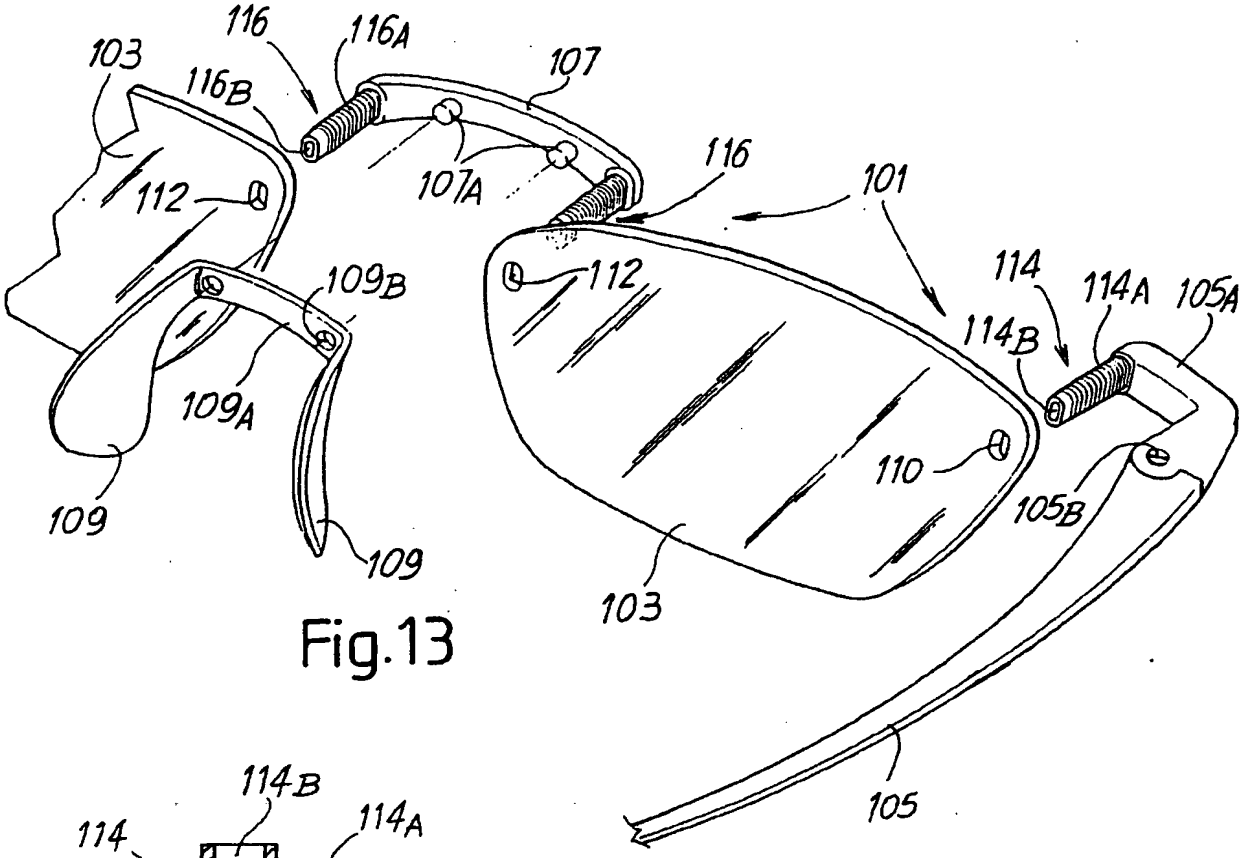

Fig.13

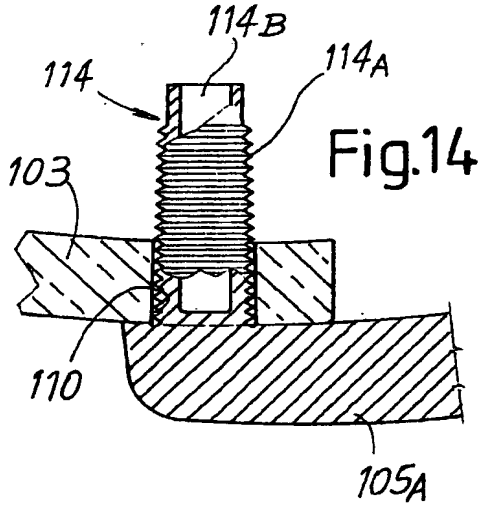

Fig.14

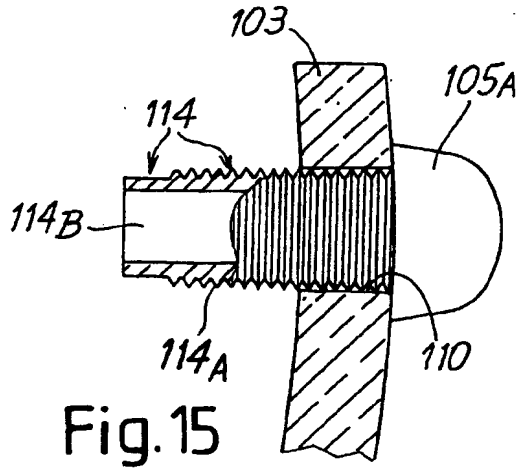

Fig.15

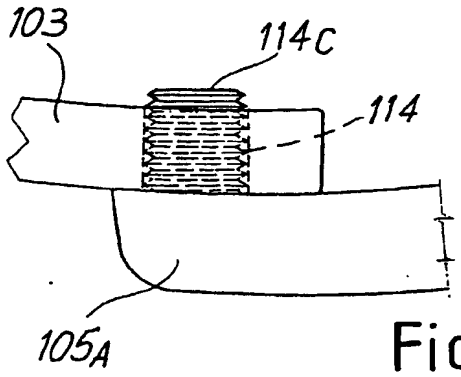

Fig.16

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INTERNATIONAL SEARCH REPORT

Int[illegible]nal Application No
PCT/IT 02/00026

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G02C1/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G02C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	EP 1 087 250 A (CARLON ROBERTO ;SINTHESYS S R L (IT)) 28 March 2001 (2001-03-28) column 2, line 58 -column 4, line 34 ---	1,2,16, 17
Y	US 6 024 445 A (CONNER BRIAN N ET AL) 15 February 2000 (2000-02-15) column 5, line 31 - line 64 ---	1-4,11, 16-19,26
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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
29 April 2002	10/05/2002

Name and mailing address of the ISA	Authorized officer
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INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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A	US 5 367 344 A (FUCHS GERHARD) 22 November 1994 (1994-11-22) column 2, line 54 -column 3, line 21 -----	1,2,16, 17

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